Tope
11/6/05

Cryostat Liquid Fill Procedure.

1. The fill line from the liquid withdrawal valve MV-1 on the dewar to isolation valve MV-3 should be leak checked separately from the rest of the system.
2. Cryostat, transfer line, and filter should be pumped down to at least 2E-4 Torr. The transfer line should be evacuated all the way up to the liquid withdrawal valve on the dewar. MV-3, MV-5, MV-6, MV-7, MV-13 should be open to the dry vacuum pump.
3. When the desired vacuum is achieved, close MV-5, MV-6, MV-7. Make sure the vacuum indicated by the ion gauge (PT-2) does not show a significant increase after the valves are closed.
4. Open MV-14 and MV-15 and expose filter to system. Monitor vacuum to see of any gas is released from the filter.
5. If vacuum degrades, open MV-5, MV-6, and MV-7 and pump on system. When desired vacuum is indicated on the ion gauge, close MV-5, MV-6, and MV-7.
6. Close up insulating vacuum and open MV-16. Pump down insulating vacuum to at least 50 microns as indicated by the convectron gauge at PT-1. Do a rate of rise on the insulating vacuum line to check leak tightness. Do not pump on insulating vacuum with turbo while liquid flows thru inner line. Cool down could create a leak and expose turbo to high pressure.
7. Note the weight of the cryostat on the scale. Liquid argon weighs 3.07 lb/liter. Cryostat holds 178 liters or 546 lbs. It should take around 200 lbs. to cover the purity monitor. Height of liquid in inches is = to added weight in lbs. x 0.0876.
8. Blow down the stockroom argon dewar to 75 psig using the vent valve. Connect a tube to divert the cold gas down towards the floor. Note the indicated stockroom dewar level before starting the fill. Stockroom dewar holds 161 liters when full.
9. Slowly open liquid withdrawal valve on dewar to allow liquid to flow thru the system. Monitor dewar pressure indicated by PI-1 and PT-3 capacitance gauge.
10. Bottom of cryostat is cold when heater RTD output is around 0.95 volts.
11. Check resistance across pins H/J in feed thru to see that filter is getting cold which indicates correct orientation.
12. Monitor cryostat weight and level probes to avoid over filling dewar. Monitor transfer line vacuum indicated by PT-1.
13. If it takes a 2$^{nd}$ stockroom dewar to fill cryostat, close MV-3 and MV-1. Swap dewars and evacuate line between MV-1 and MV-3 thru MV-2.
14. Blow down 2$^{nd}$ dewar to 75 psig.
15. Slowly open MV-1 to continue filling system.
16. When cryostat has reached desired liquid level, close MV-3.